

## PICTURE OF THE MONTH

## Pacific Cyclones Viewed by ATS I

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Current ATS I satellite observations of the central and eastern Pacific are yielding a number of excellent examples of deepening and dissipating storms. Each day these sequential pictures covering a 6-hr period are made into movie loops at NESC and are used in real-time to observe the motion of frontal systems and waves and to extract low- and high-level winds for the NMC analyses.

On Oct. 25, 1969 (fig. 1), two large cyclonic systems dominated the North Pacific. At the time of this picture, both systems had closed circulations extending from the surface to 500 mb. Early on October 25, the eastern system (A) began to deepen rapidly from the effects of a secondary vorticity center. The characteristic bright convective comma-shaped cloud (east of A) associated with the vorticity center was moving east-northeast at a speed of 40 kt during this day. Continued deepening of this system was evident from the increasing area of high and middle clouds along the eastern edge of the storm. By the end of the "picture day," 2242 GMT, cirrus had reached western Washington and Oregon.

In figure 2, the vortex associated with this first system (A) has moved into the Gulf of Alaska, and the adjoining frontal band lies along the west coast of Canada and the United States. A dry slot, denoted by the dark partly cloudy area, has intruded into the center of the vortex. This intrusion of dry air indicates that the system has reached its maximum development. By 2048 GMT on October 27 (fig. 3), this entire system had moved inland,

and the remaining cloudiness (A) can be seen in the western areas of Canada and Washington and Oregon.

The cloudiness associated with the western system (B, fig. 1) covers most of the central Pacific. A multi-layered frontal band stretches from the well-defined circulation center southwestward (beyond this picture) to 155° E. A large area of cold-air cumulus clouds are moving southeastward behind the frontal band. By 2107 GMT on October 26, this occluded storm had moved northeastward, and the storm center and the cellular cumulus field remain well defined. A brighter cirrus layer, associated with the jet stream, can be seen crossing the front at (C), figure 2.

System B continued to move northward and was located south of the Aleutian Islands in figure 3. The cellular cumulus immediately behind the front have diminished in amount, and an area of clear dry air is being advected into the center of the vortex. A small comma-shaped area appears in this clearing area, but there was no subsequent wave development. The cirrus cloud edge (C) associated with the polar jet can again be seen along the back edge of the front. From this point it curves northeast across the front as on the previous day.

These are but two of the many changing features that appear on these 3 days. After examining the pictures, one can see other interesting synoptic and mesoscale changes in this North Pacific area.

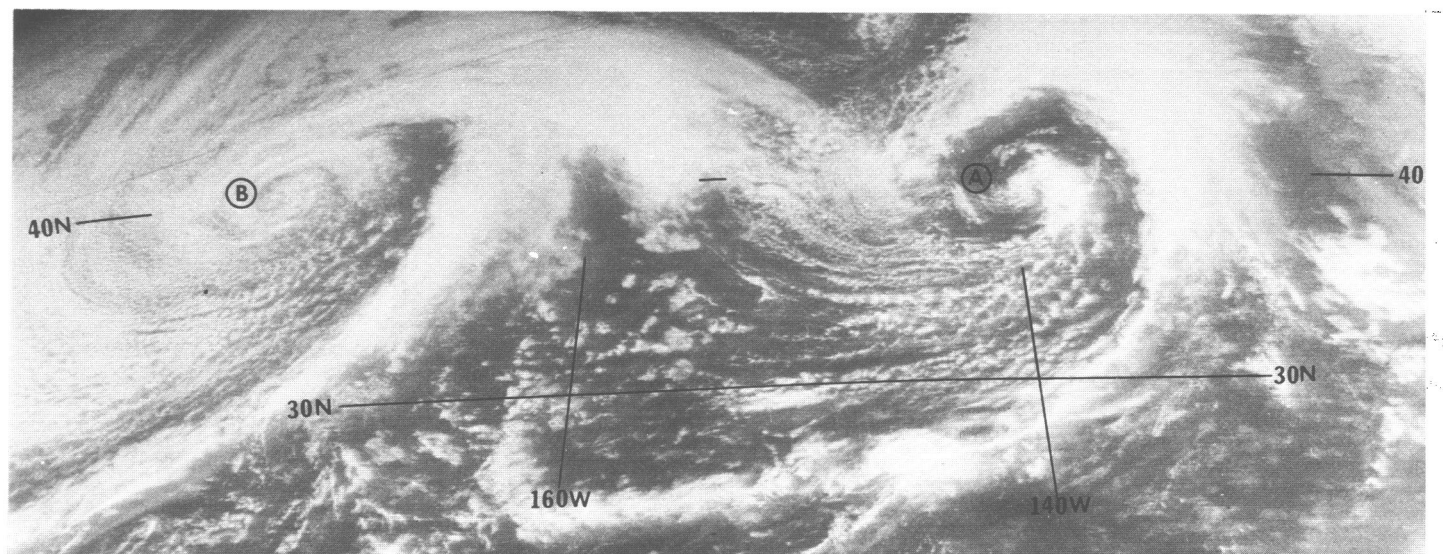


FIGURE 1.—Portion of an ATS I picture at 2107 GMT on Oct. 25, 1969.

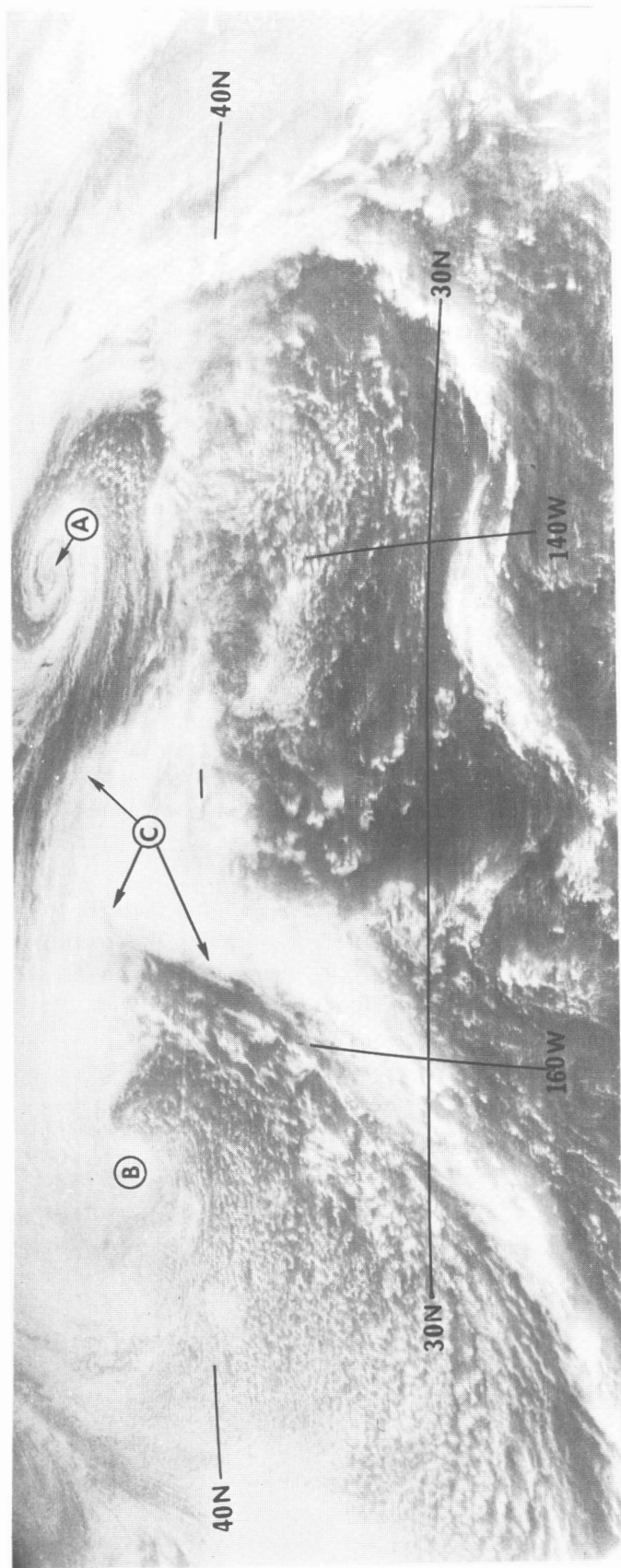


FIGURE 2.—Portion of an ATS I picture at 2107 GMT on Oct. 26, 1969.

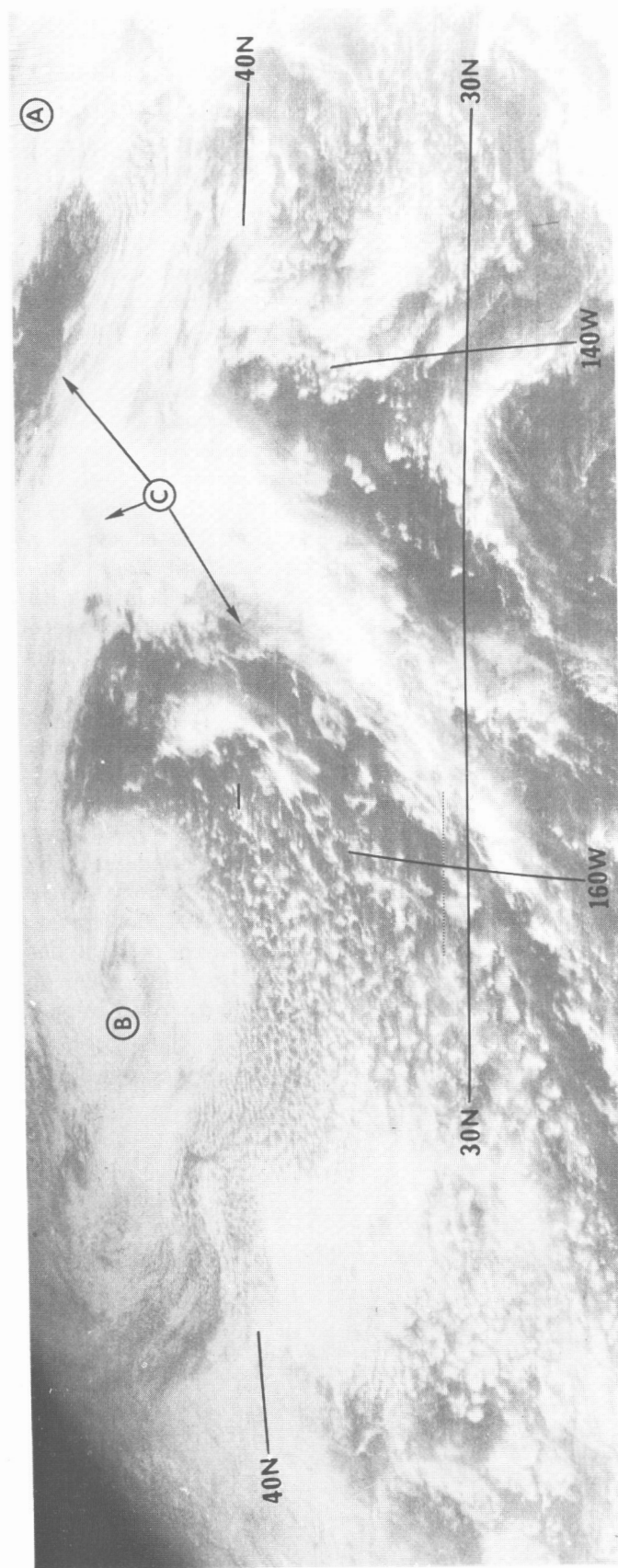


FIGURE 3.—Portion of an ATS I picture at 2048 GMT on Oct. 27, 1969.